

Press Release

Universal Lathe INDEX B400

Universal turning at the highest level

At the EMO 2017, INDEX-Werke will present a newly developed CNC universal lathe with the INDEX B400. It is distinguished by its ease of setup and ergonomic design, as well as by many elaborate details that ensure a high level of quality.

5 With the new B400, Index completes its range of products by a universal turning machine, which is aimed at the production of flange and shaft parts in small series from a lot size of 1. The entry-level version with belt-driven main spindle, a star turret with a linear Y-axis and an NC tailstock convinces with its clearly structured machine layout and a wide range of possible applications. An outstanding feature is the consistently
10 ergonomic design, which allows simple operation and quick setup. This is supported by numerous advantageous details, which run like a red thread through the entire machine design already in the standard version. Customers with special machining requirements can upgrade the B400 accordingly, for example, with a bar package that allows them to attach a bar loader, or with a steady rest that can be moved and positioned electrically.

15 The INDEX B400, which will be presented for the first time at the EMO in Hanover, is equipped with a 24 kW spindle (bar capacity 82 mm, speed 4,000 rpm, torque 520 Nm). An even more powerful variant will follow in the foreseeable future.

20 User-friendliness starts at the enclosure

It goes without saying that the new B400 will appear in the new and redesigned enclosure that is typical for Index and Traub: featuring a clearly structured cubic design, it follows the technical requirements. Its smooth shape – without dispensable kinks and edges – comes along with advantages in terms of tightness. The machine operator
25 benefits from the large viewing glass on the front and the bright back of the machine, which provides a bright, friendly workplace when several machines are arranged in a row.

Smooth work area for optimum chip flow

30 In the interior, a slant machine bed made of mineral cast and inclined by 45 degrees, with particularly vibration-damping properties, forms the basis for high-precision machining. It is designed as a monoblock, on which all the large-scale guides and components are installed. The slim overall cross-section allows the operator to carry out all setup work in comfortable proximity.

35 Like the exterior, the interior also impresses by its smooth appearance – without pockets
and corners in which chips could get caught, affecting process safety and reliability. A
continuous covering of guides and energy supply made of single-piece metal panels
supports this impression. Know-how accumulated over many years is evident in
numerous details, for example, in a pocket in the sheet metal enclosure above the main
40 spindle, which ensures collision-free use of long tools, or in guide rails that are screwed
from below to achieve smooth surfaces in the work area.

Universality requires high torques

For the main spindle, the developers chose a belt drive that can generate very high
torques even at relatively moderate power. The belt pull was deliberately placed in the Y-
45 direction in order to keep the quality-defining X-axis, which is responsible for turning
diameters, free of disturbances. The rotary encoder sits directly on the spindle so that the
C-axis quality expected from Index is guaranteed.

Workpiece clamping is designed as partial hollow clamping. This allows inserting
workpieces up to a diameter of 80 mm and a length of 500 mm into the chuck. Another
50 advantageous detail is the holding brake designed as a disc brake on the main spindle. It
allows clearance-free clamping at any angular position.

Tool turret with easy-to-set up W-serration

On the INDEX B400, a star turret with VDI 30 mounting according to DIN 69880 and W-
55 serration is used as tool carrier. The latter contributes to an effective setup of the twelve
tools. That is because the W-shaped profile ensures that the basic holders on the tool
turret can be aligned reliably and quickly. The repeatability achieves results in the micron
range.

The tool turret can be moved not only on the cross slide in the X- and Z-directions, it also
60 has a separate linear Y-axis. Compared to a Y-traverse movement interpolated with the
X-axis, this orthogonal arrangement provides a precision advantage. If maximum
diameter precision is required, the X-axis of the INDEX B400 can optionally be equipped
with a glass scale.

The spacious work area provides a turning length in Z of 750 mm. The turret can be
65 moved up to 265 mm in the X-direction and up to 120 mm in the Y-direction. All
movements in this area are not restricted in any way. Particularly interesting for many
face milling and drilling operations is the large distance of 80 mm, which the tool can
move “under the turning center”.

70 **Freely positionable NC tailstock**

The tailstock, which is mounted on generously dimensioned guideways on the B400, is a purely electrical assembly that can be positioned freely from the NC program. The drive is also used to generate the pressing force. This eliminates the need for a hydraulic quill.

75 In the standard version, the tailstock is equipped with a Morse cone center MK 5. It has a neutral interface in which the user can insert different centers and elements available on the market right up to drilling tools. Alternatively, a steep cone center SK 30 can be used. This Index design has a significantly more robust bearing and service life. A helpful detail: To facilitate the setup on the B400, insertion aids for wave-shaped workpieces are available.

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Options extend the range of applications of the INDEX B400

The universality of the B400 does not stop at economic turning of medium lot sizes. For attaching a bar loader, Index provides an optional bar package, which consists of a required hollow clamping cylinder and a workpiece removal unit. The latter assumes an
85 important function for cutting off the workpiece by completely enveloping it with two half-shells. After the cutting process, the handling system with the workpiece moves aside to the right, swings out, opens the shells, and places the part onto the integrated conveyor belt. The work area is then again fully free in the inactive state.

As a further option, Index offers for the INDEX B400 an electrically positioned,
90 hydraulically operated NC steady rest, which can be useful for external machining of long shafts. Its position can be controlled from the CNC program.

CL supply from a modular kit

For flexible chip and cooling lubricant management, INDEX-Werke have developed a
95 modular kit that is independent of specific machines and from which solutions up to high-end versions can be generated. For the B400, the standard includes a chip conveyor with lifting pump and a 300 l cooling lubricant tank with filter basket for easy filtration. It can be operated with the two pump pressures of 8 and 20 bar. Optionally, customers can choose from different solutions up to the INDEX ECOfluid concept, which provides a large-
100 volume tank, a controlled cooling system and frequency-controlled pumps with up to 80 bar high pressure.

Control technology – the heart of the machine

105 Last, but not least: The actual value of a turning machine depends on the applied control technology. INDEX accepts no compromise, including for the B400, which is equipped with the latest generation of Siemens Sinumerik 840D sl controls and features intuitive operation using an 18.5" touch monitor. Particular comfort is provided by the Xpanel operating concept developed by INDEX, which opens up access to networked

110 production. With Xpanel, your staff always has all relevant information for efficient production right at the machine.

Advantages of the INDEX B400 in detail

- Low-cost standard version
- Optionally expandable with bar package (hollow-shaft cylinder and workpiece handling) and programmable steady rest
- Ergonomic design for easy operation and setup
- Clearly structured work area for a variety of applications and optimum chip flow
- Monoblock slant bed made of mineral cast
- Generously dimensioned guides in Z-direction (45 mm)
- Belt drive for high torques
- Star turret for 12 tools with VDI 30 mounting according to DIN 69880 and W-serration for high process reliability
- Linear Y-axis
- 265 mm X-axis travel
- NC tailstock with electrical axis
- Latest generation of Siemens control and INDEX Xpanel

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Figures:

How intensively the developers have considered the demands of users of a universal machine is evident on the INDEX B400 consistently from the layout of the machine to the components and many details. A major focus is on very high operating ergonomics and maximum ease of setup.